

**Ofcom Consultation - Exploring future use of the unpaired 2100 MHz
(1900 - 1920 MHz) spectrum**

Future Use of Unpaired 2100 MHz Spectrum

Executive Summary

JRC and its Members welcome the opportunity to respond to this consultation and as critical system operators JRC Members depend on access to spectrum and as such are pleased that one of Ofcom's considerations regarding alternative use of the spectrum is for utility / smart grid applications. JRC's response is summarised below;

- JRC are pleased that this block of unused spectrum is being considered for alternative uses;
- It is positive that one of Ofcom's considerations is that a possible alternative use could be to enable the deployment of utility smart grids, but spectrum at this frequency would be seen as complementary to priority spectrum (sub 1GHz) which is essential to establish cost effective and robust wide area operational communications coverage; and
- There is not a clearly available ecosystem of hardware vendors for the frequency range under consideration - this would inhibit (possibly completely) any actual deployments.

To this end we are very supportive of the work underway in Ofcom's 'Spectrum for Utilities' study and as such our perspective is aligned to the long-term imperative of additional spectrum access for the Energy Network Operators to facilitate Government policy, i.e. the 'Net Zero' transition. We also acknowledge that the current consultation is in line with the two policy documents issued by DSIT on 11th April 2023, both of which indicate a need for dedicated spectrum access for the utility sector. (Wireless Infrastructure Strategy¹ and Spectrum Policy Statement²)

Background

Joint Radio Company Ltd (JRC) is a wholly owned joint venture between the UK electricity and gas industries specifically created to manage the radio spectrum allocations for these industries used to support operational, safety and emergency communications.

JRC manages blocks of VHF and UHF spectrum for Private Business Radio applications, telemetry & telecontrol services and network operations. JRC created and manages a national cellular plan for coordinating frequency assignments for several large radio networks in the UK.

The VHF and UHF frequency allocations managed by JRC support telecommunications networks to keep the electricity and gas industries in touch with their field engineers. These networks provide comprehensive geographical coverage to support installation, maintenance and repair of plant in all weather conditions on 24 hour/365 days per year basis.

JRC's Scanning Telemetry Service is used by radio based Supervisory Control And Data Acquisition (SCADA) networks which control and monitor safety critical gas and electricity industry plant and equipment throughout the country. These networks provide resilient and reliable communications at all times to unmanned sites and plant in remote locations to maintain the integrity of the UK's energy generation, transmission and distribution.

¹ <https://www.gov.uk/government/publications/uk-wireless-infrastructure-strategy/uk-wireless-infrastructure-strategy>

² <https://www.gov.uk/government/publications/spectrum-statement/spectrum-statement>

JRC supports the European Utility Telecommunications Council's Radio Spectrum Group, and participates in other global utility telecom organisations. JRC participates in European Telecommunications Standards Institute (ETSI) working groups developing new radio standards, and European telecommunications regulatory groups and workshops.

JRC also manages microwave fixed link and satellite licences on behalf of the utility sector.

JRC works with the Energy Networks Association's Future Energy Networks Groups assessing ICT implications of Smart Networks, Smart Grids & Smart Meters and is an acknowledged knowledge source for cyber-security in respect of radio networks.

JRC's Detailed Response to Questions

Q 1. Do you agree with our provisional view that the current non-use of the unpaired 2100 MHz spectrum for high power mobile services and potential future use of the 1900 - 1910 MHz spectrum for the ESN Gateway, may not be optimal given the possible alternative uses of the spectrum?

Q 1. JRC Response

Confidential? No.

Yes, JRC agrees with Ofcom's analysis that the current non-use of this spectrum is sub-optimal, but in assessing potential alternative uses, Ofcom needs to examine in greater detail why this situation has arisen at a time when mobile operators are still seeking additional spectrum to ensure that a similar situation does not arise out of any future / pending allocations.

Q 2. Do you agree with our provisional view that of the alternative high power uses of the unpaired 2100 MHz spectrum, national infrastructure uses such as rail and utilities are likely to be the most optimal?

Q 2. JRC Response

Confidential? No.

The case for use of 1900-1910 MHz for railways is likely to be optimal, but further work needs to be undertaken to analyse whether an allocation of 1910-1920 MHz to utilities is optimal given the absence of any other use of this spectrum for critical utility operations elsewhere in the world to JRC's knowledge.

It must also be observed that 'high power use' is only possible in the 1900-1915 MHz portion of the band, 1915-1920 MHz being restricted to 'low power uses' limits its usefulness particularly from the perspective of operational control networks for utilities.

Q 3. **Question 3:** Do you agree with our assessment that liberalising the spectrum and relying on trading is unlikely to be effective in securing optimal use of this spectrum?

Q 3. JRC Response

Confidential? No.

JRC agrees with Ofcom's analysis that if liberalising the spectrum and relying on trading has not delivered an optimal satisfactory outcome in the last 20 years, it is unlikely to do so in the future.

Indeed, the spectrum focus of Mobile Network Operators (MNOs) has now shifted to other bands with more attractive operational characteristics. The low economic value of this spectrum therefore provides insufficient incentive for them to invest management time in its disposal / redeployment.

Q 4. Question 4: Do you agree that revocation of the licences to enable reallocation may therefore be necessary to secure optimal use of the spectrum and that this is objectively justified and proportionate?

Q 4. JRC Response

Confidential? No.

JRC agrees with Ofcom's analysis that revocation of the licences is necessary to secure optimal use of the spectrum and that this is objectively justified, proportionate and consistent with Ofcom's legal duties.

It could even be argued that in not taking action to recover spectrum which has remained unused for over 20 years then Ofcom is already failing in its legal duties.

Q 5. Do you have further views / comments that you wish to make in respect of this consultation?

Q 5. JRC Response

Confidential? No.

JRC welcomes the recognition in the consultation that utilities need access to spectrum for critical operational communications, but notes that the reasons that the public mobile operators have not exploited this spectrum will apply equally to utilities, i.e.

- *There is a lack of an ecosystem for equipment in this band, especially suitable for deployment in a specialist network supporting critical national infrastructure.*
- *Even where appropriate vendors might be interested in entering this specialist market, they are likely to need to work through 3GPP to modify the specifications for equipment designed to work in this band in order that they can incorporate features essential for utility operations, such as increased user equipment (UE) power levels, so that the devices will operate satisfactorily in a utility environment. Processing new requirements through the 3GPP framework / system would introduce a significant delay before suitable components would be available to incorporate in designs.*
- *Whilst JRC recognises that the creation of a new ecosystems is possible via 3GPP, this must be supported by the vendor community. It is unlikely that the UK market alone (for utility smart grid application) represents sufficient volume to stimulate hardware vendors to produce additional standardised products which could take in-excess of 10 years and thereby not satisfy the pressing need of the Energy Network Operators to enable the 'Net Zero' transition.*
- *JRC would encourage Ofcom to seek to co-ordinate within the CEPT framework to secure a common approach to this band across Europe which would lead to the development of a much broader eco-system than would be possible if this approach was limited to the UK only.*

- *Further technical studies need to be undertaken to understand how the spectrum 1910-1920 MHz might be deployed in a utility context given that there are technical constraints on the upper 5 MHz. The usefulness of the spectrum and potential functionality / services that might be possible will be severely constrained if the spectrum has to be divided into two 5 MHz channels – one for low power and one for high power – or used as a contiguous 10 MHz channel, but only at low power to respect the coordination constraints on the top 5 MHz.*
- *Due to the potentially limited relevance of the low power service in the upper 5MHz of the band for utility use then it would be appropriate for Ofcom to explore alternative uses of the 1915-1920 MHz.*

In conclusion:

- *We encourage Ofcom to engage with the equipment vendor community to better understand the challenges of creating a cost-effective ecosystem for utility products in this frequency band in the absence of international deployment of the band for critical operational system requirements.*
- *If this spectrum is to be allocated in the UK for utilities with an ambition to achieve international harmonisation of the band for critical applications, we encourage Ofcom to facilitate critical sector developments in key international fora such as CEPT, the ITU and 3GPP. This will be especially important if the ultimate desire is that 5G technology is to be enabled in the long term.*
- *To progress this approach, the energy network operators would need to develop more fully the business case for system deployment to establish the appropriate funding mechanism. We anticipate that this spectrum could be used as a complementary band to sub 1-GHz spectrum (The Priority Band) which is necessary to establish cost effective and robust wide area operational communications coverage.*
- *In developing business cases for deployment of utility systems in this band, it would be logical to await the outcome of the Ofcom's 'Utility Spectrum Review Study'. Midband spectrum (1-5 GHz) has always been seen as complementary to a spectrum allocation below 1 GHz for wide area applications.*

The timescales for undertaking studies and achieving any necessary outcomes (such as 3GPP standard adaptation) must be taken into account in any Ofcom allocation decision.